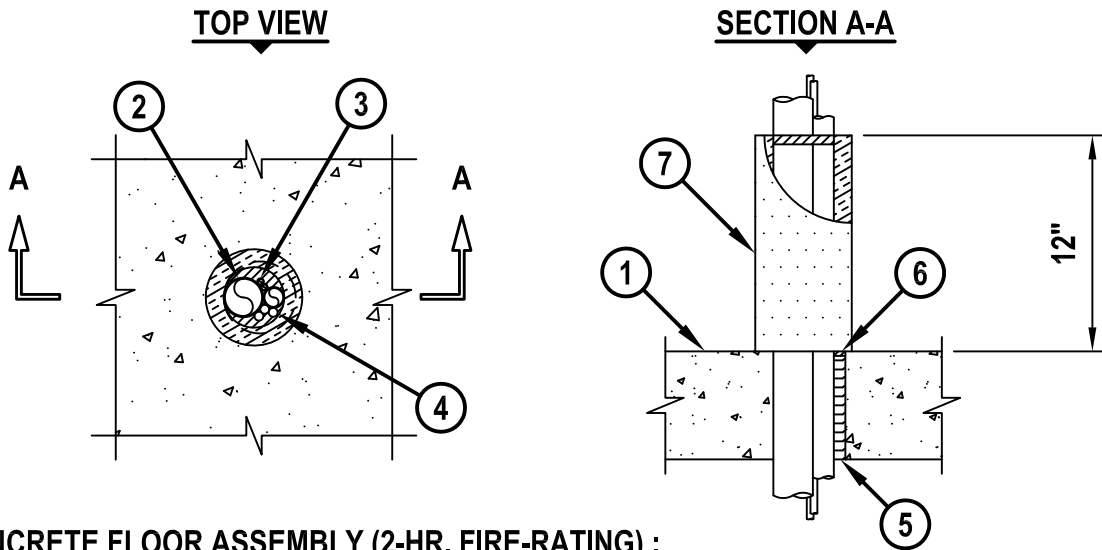


**MULTIPLE PENETRANTS THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL**

F-RATING = 2-HR.

T-RATING = 0-HR. OR 2-HR.



1. CONCRETE FLOOR ASSEMBLY (2-HR. FIRE-RATING) :
  - A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MINIMUM 6" THICK).
  - B. PRECAST (HOLLOW-CORE) CONCRETE FLOOR (MINIMUM 6" THICK).
  - C. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL.
2. ANY COMBINATION OF THE FOLLOWING METALLIC PENETRANTS MAY BE WITHIN GROUPING (ONLY 1 PIPE MAY EXCEED 1" NOMINAL DIAMETER) :
  - A. MAXIMUM 2" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
  - B. MAXIMUM 2" NOMINAL DIAMETER CAST OR DUCTILE IRON PIPE.
  - C. MAXIMUM 2" NOMINAL DIAMETER STEEL CONDUIT OR EMT.
3. MAXIMUM 1/4" NOMINAL DIAMETER COPPER PIPE OR TUBING (MAX. QTY. = 2) MAY BE WITHIN GROUPING.
4. MAXIMUM 7/C NO. 12 AWG POWER CABLE (MAX. QTY. = 3) MAY BE WITHIN GROUPING.
5. MINIMUM 5-3/4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
6. MINIMUM 1/4" DEPTH HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT.
7. [OPTIONAL] NOMINAL 1" THICK GLASS-FIBER PIPE INSULATION (12" HIGH) INSTALLED AROUND GROUPING OF PENETRANTS, RESTING FLUSH WITH TOP SURFACE OF FLOOR.

**NOTES :**

1. MAXIMUM DIAMETER OF OPENING = 4".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2".
3. ONE GROUPING OF ANY COMBINATION OF THE ABOVE LISTED PIPES, TUBING, CONDUITS AND CABLES TO BE INSTALLED WITHIN THE OPENING.
4. WHEN PIPE INSULATION IS USED, T-RATING = 2-HR.
5. WHEN PIPE INSULATION IS USED, APPLY MINIMUM 1/2" DEPTH HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT BETWEEN THE GROUPING OF PENETRANTS AND THE PIPE INSULATION, FLUSH WITH TOP END OF INSULATION.
6. MINIMUM 1/4" DEPTH HILTI FS-ONE MAX OR FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL.



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Sheet	1 of 1
Scale	3/32" = 1"
Date	Jan. 15, 2015

Drawing No.

**CBJ  
8020b**